

III-21.01 General

Cost estimates will be required during the various development phases of a project. These phases would typically be scoping, project concept, and final design or engineer's estimate. On larger or complex projects it may be necessary to develop some intermediate estimates.

The designer will most often prepare project concept and engineer's cost estimate for the proposed work detailed in the project concepts or plans. Section II-06 provides guidance on how to document conceptual cost estimates for project concept reports and other environmental documents. The final design cost estimate should use specific bid items. Generalizations of estimated costs should only be made on conceptual estimates.

The spec, code, description, and unit should match existing bid items verbatim and should be uppercase, as shown in the NDDOT - Historical Fact Sheet. Cost Estimates should be completed using the Roadway Inventory Management System- Highway Projects (RIMS#HP) program (NDDOT Mainframe). The designer should consult the "Cost Estimate Bid Opening Schedule Training Manual" prepared by the Planning and Programming Division for procedures for using the mainframe "RIMS#HP" program.

The lead designer should coordinate or combine the cost estimates of each Design Section and Division or District into one overall final design cost estimate. The total estimated cost must also be summarized by project number and funding source (federal, state, and local participation).

The final design cost estimate should be a separate attachment to the project plans. The estimate must include the item specification and code, description, unit, quantity, unit price, and total unit cost for each item. The total estimated project cost must be tabulated and shown on the bottom of the page.

The project concept cost estimate is a matter of open record and it is often desirable to give the public a good handle of proposed project costs. The final design cost estimate should be kept confidential until the contract has been bid.

III-21.02 Existing Bid Items

The Spec, Code, Description, Unit, and Unit Prices for existing bid items can be identified from the following sources or references:

- NDDOT Annual Average Bid Prices
- NDDOT Historical Fact Sheet
- NDDOT Project Listing Fact Sheet

All of the above sources are available in a hard copy format. The Historical Fact Sheet and the Project Listing Fact Sheet can be accessed through the mainframe "RIMS#HP" program under the "Cost Estimate" function.

III-21.03 Temporary Bid Items.

Temporary Bid Items should only be used on conceptual estimates. Temporary bid items are intended to simplify and generalize groups of bid items or other items that are not directly bid; such as, intersection improvements or right of way acquisition. When using a temporary bid item, the appropriate spec number should be based on the type of work or product and the code number is usually "9999"; for example, 720-9999 - RIGHT OF WAY - L SUM.

III-21.04 New Bid Items

The Design Division Traffic Section is responsible for maintaining the bid item data. If a new bid item is required, the designer should contact the Design Division - Traffic Section a minimum of two weeks before plan completion. The Design Division will assist with the creation of the new bid item and coordinate the inclusion of the bid item into the department computer systems.

III-21.05 Development of Unit Prices

The designer should review the unit prices for existing bid items and develop a unit cost based on similar type projects, similar regional areas, and similar quantities. For new bid items the designer should develop a unit cost based on estimated material, equipment, and labor costs.

III-21.06 Contract Bond

The designer may have the mainframe "RIMS#HP" program automatically calculate the amount of contract bond based on a percentage of the contract amount. If the designer is preparing an estimate by hand, the following guidelines may be used to determine the amount of contract bond.

Total Contract Amount	Contract Bond Amount by % of Total Contract Amount
0 to 100,000	2.0%
100, 000 to 500,000	1.5%
500,000 to 1,000,000	1.0%
Over 1,000,000	0.075%

III-21.07 Mobilization

The designer may have the mainframe "RIMS#HP" program automatically calculate the amount of mobilization based on a percentage of the contract amount. The designer may also estimate the amount of mobilization by hand based on the types of work operations such as structural, bituminous paving, concrete paving, etc.

III-21.08 Incidental Work

Generally, all work and materials should be paid for as separate bid items; however, some work and materials may be better suited to be made incidental to the bid item they are associated with. Typically an incidental work item will have a very short time of completion and cost compared to the pay item it is attached to. The following guidelines should be used to determine when work items **should not** be incidental to other pay items:

- The work item estimated cost exceeds two thousand dollars.
- The work item quantity is variable and difficult to measure or determine by the contractor.
- When bid items and prices require evaluation.

The designer shall identify all incidental work in the plan notes and a separate project note shall be provided for each incidental work activity.

III-21.09 Project Prefixes

The project number typically begins with a prefix which categorizes the highway system, type of work, and NDDOT/FHWA interaction or involvement. Projects often have more than one prefix and project number. These prefixes may be used in conjunction as one project number, or they may be used separately as entirely different project numbers. Additionally, each project may have several funding sources (federal, state, and local participation) and different participation rates based on the prefixes and items of work. Examples of multiple project prefixes or numbers include: NH funds for a paving project combined with TE funds for a bikeway. Examples of multiple participation rates would include mainline paving versus service road paving and city fund only items.

The Planning and Programming Division - Programming Section or Local Government Division - Urban Section will determine the appropriate funding prefix and participation ratios based on NDDOT policy and guidelines. The designer should discuss and coordinate the project numbers, participation rates, and pay items with the respective Divisions for incorporation into the project concept report, cost participation, and maintenance agreements.

Appendix I-13.03 summarizes the project prefixes and FHWA involvement.

III-21.10 Engineering Cost

The designer should use 15% and 10% engineering cost for project concept reports and completed plans respectively.

III-21.11 Checklist

The following checklist may be used to aid the designer on the types of costs that need to be reviewed and included in the preliminary and final cost estimates.

Roadway Design Considerations:

The designer should compute the following costs.

- Contract Bond
- Grading (widening, reshaping, slope flattening)
- Bases (aggregate or permeable)
- HBP surfacing (HBP, asphalt cement, prime coat, tack, milling)
- PCC surfacing (PCC, dowels, joint seals)
- Surfacing misc. (curb and gutter, sidewalk, medians, curb ramps, edge drains)
- Drainage (culverts, storm sewer, edge drains, detention)
- Erosion control (temporary and permanent measures, seeding, sodding)
- Mobilization
- Work zone traffic control (signing, devices, detours, bypass)
- Signing, markings, guardrail, lighting, and signals (Traffic Section to provide)

Bridge Design Considerations:

The designer should request bridge costs from the Bridge Division.

- Number of major stream crossings
- Flood plain proximity to crossing
- Nearby structures that are similar
- Number of bridge rehabilitations
- Clearance requirements

Right of Way Considerations:

The designer should request right of way cost from the Design Division Right of Way Section.

- Permanent right of way
- Temporary easements (construction)
- Permanent easements (drainage)

- Borrow

Utility Considerations:

The designer should request utility cost from the Design Division Traffic Section, Utilities Engineer.

- Utility adjustment and relocation

Environmental Considerations:

The designer should request environmental cost from the Design Division Environmental Section.

- Wetlands
- Historic structures
- Archeological sites
- 4(f) and 6(f) parklands
- Hazardous waste sites
- Noise mitigation
- Threatened and endangered species
- Socio-economic impacts